

- DITOMASO J. M. AND E. A. HEALY. 2003. Aquatic and riparian weeds of the West. Agriculture and Natural Resources Publication 3421, Division of Agriculture and Natural Resources, University of California, Oakland, CA.
- GARTNER B. L. 1991a. Is the climbing habit of poison oak ecotypic? *Functional Ecology* 5:696–704.
- . 1991b. Relative growth rates of vines and shrubs of western poison oak, *Toxicodendron diversilobum* (Anacardiaceae). *American Journal of Botany* 78:1345–1353.
- GASKINA J. F., F. J. RAYAN, G. F. HRUSA, AND J. P. LONDOD. 2006. Genotype diversity of *Salsola tragus* and potential origins of a previously unidentified invasive *Salsola* from California and Arizona. *Madroño* 53:244–251.
- GERLACH J. D. 2004. The impacts of serial land-use changes and biological invasions on soil water resources in California, USA. *Journal of Arid Environments* 57:365–379.
- AND K. J. RICE. 2003. Testing life history correlates of invasiveness using congeneric plant species. *Ecological Applications* 13:167–179.
- HENDERSON L. 2001. Alien weeds and invasive plants. Plant Protection Research Institute Handbook No. 12. Agricultural Research Council, Pretoria.
- HICKMAN J. C. (ED.). 1993. The Jepson manual: higher plants of California. University of California Press, Berkeley, CA.
- HOLLAND D. C. 1987. *Prosopis* (Mimosaceae) in the San Joaquin Valley, California: vanishing relict or recent invader? *Madroño* 34:324–333.
- HRUSA F., B. ERTTER, A. SANDERS, G. LEPPIG, AND E. DEAN. 2002. Catalogue of non-native vascular plants occurring spontaneously in California beyond those addressed in *The Jepson Manual* – Part I. *Madroño* 49:61–98.
- INDERJIT (ED.). 2005. Invasive plants: ecological and agricultural aspects. Birkhäuser, Basel.
- JACONO C. C. 2002. *Landoltia punctata* (G. Mey.) Les & D.J. Crawford. U.S. Geological Survey Nonindigenous Aquatic Species Database, Gainesville, FL. Available at: <http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=1116>.
- JEPSON FLORA PROJECT. 2007. Index to taxa recorded from California since the Jepson manual (range extensions from outside California and new naturalizations). Available at: http://ucjeps.berkeley.edu/interchange/I_index_newrange.html.
- LAVERGNE S. AND J. MOLOFSKY. 2007. Increased genetic variation and evolutionary potential drive the success of an invasive grass. *Proceedings of the National Academy of Sciences of the United States of America* 104:3883–3888.
- MATHEI O. 1995. Manual de las malezas que crecen en Chile. Alfabeta Impresores, Santiago, Chile.
- MYERS J. H. AND D. R. BAZELY. 2003. Ecology and control of introduced plants. Cambridge University Press.
- PANETSOS C. A. AND H. G. BAKER. 1967. The origin of variation in “wild” *Raphanus sativus* (Cruciferae) in California. *Genetica* 38:243–274.
- POSCHLOD P., D. MATTHIES, S. JORDAN, AND C. MENGEL. 1996. The biological flora of Central Europe – an ecological bibliography. *Bulletin of the Geobotanical Institute ETH* 62:89–108.
- PYŠEK P., D. M. RICHARDSON, M. REJMÁNEK, G. WEBSTER, M. WILLIAMSON, AND J. KIRSCHNER. 2004. Alien plants in checklists and floras: toward better communication between taxonomists and ecologists. *Taxon* 53:131–143.
- RANDALL J. M., M. REJMÁNEK, AND J. C. HUNTER. 1998. Characteristics of the exotic flora of California. *Fremontia* 26:3–12.
- REJMÁNEK M. AND M. J. PITCAIRN. 2002. When is eradication of exotic pest plant a realistic goal? Pp. 249–253 in C. R. Veitch and M. N. Clout (eds.), *Turning the tide: the eradication of invasive species*. IUCN, Gland, Switzerland and Cambridge, United Kingdom.
- ROBBINS W. W., M. K. BLUE, AND W. S. BALL. 1951. Weeds of California, 2nd ed. California Department of Agriculture, Sacramento, CA.
- RYAN F. J. AND D. R. AYERS. 2000. Molecular markers indicate two cryptic, genetically divergent populations of Russian thistle (*Salsola tragus*) in California. *Canadian Journal of Botany* 78:59–67.
- SUPKOFF D. M., D. B. JOLEY, AND J. J. MAROIS. 1988. Effect of introduced biological-control organisms on the density of *Chondrilla juncea* in California. *Journal of Applied Ecology* 25:1089–1095.
- VIVRETTE N. J. AND C. H. MULLER. 1977. Mechanism of invasion and dominance of Coastal grassland by *Mesembryanthemum crystallinum*. *Ecological Monographs* 47:301–318.
- WALSTAD J. D. AND P. J. KUCH (EDS.). 1987. Forest vegetation management for conifer production. Wiley, New York, NY.
- WEBER E. 2003. Invasive plant species of the world. CABI Publishing, Cambridge, MA.

American Perceptions of Immigrant and Invasive Species: Strangers on the Land. By PETER COATES. 2007. University of California Press, Berkeley, CA. 266 pp. Hardcover. \$39.95. ISBN 13: 978-0-520-24930-1.

One of the defining characteristics of humans is their tendency to want to manage nature so that it meets their perceptions of “how things should be.” Ecologically, this has been translated in numerous ways, from wildlife management practices that once promoted intense predator control to notions of restoring landscapes to “pre-European conditions.” Of course, these perceptions are not universally accepted at any given point in time, and perhaps more important the prevailing opinion (i.e., conventional wisdom) often shifts over time. Hence, we now see the reintroduction of predators into areas they were once extirpated from, and the gradual realization by restoration practitioners that trying to convert an ecosystem to an arbitrary point in time (and then keeping it there) is fraught with both conceptual and practical problems. In *American Perceptions of Immigrant and Invasive Species*, Peter Coates, an environmental historian at the University of Bristol, uses historical and contemporary case studies to analyze views on non-native species in the United States over the last

two centuries. But rather than limiting his analysis to an ecological viewpoint, Coates poses the question of whether our attitudes towards non-native plants and animals have simply been a reflection of the prevailing way American society thinks about immigrants in general, or whether the two issues are essentially independent of one another. By doing this, he places the issue of biological invasions in a broader context of social and cultural perceptions than they are typically found. One of the tangible achievements of Coates book is that it clearly shows that perceptions of "how things should be" depends on where and when you are standing in a certain place, a lesson that scientists and conservation practitioners too frequently forget.

In many ways, *American Perceptions of Immigrant and Invasive Species* is an extension of Coates' earlier book *Nature: Western Attitudes Since Ancient Times*, (Blackwell Publishers 1998). Coates employs the same approach here as he did in *Nature*. Using history as his pathway, he describes the development of perceptions towards natural phenomena both within and across given periods of times, with the path ultimately ending in our own contemporary era. Though he does not ignore their philosophical underpinnings, Coates is an empiricist at heart and is more interested in the cultural manifestations and social outcomes of our perceptions than their logic or intellectual merit. Indeed, Coates uses their contradictions to illuminate from where these perceptions arise and how they become part of our collective psyche. In the case of *American Perceptions of Immigrant and Invasive Species*, he has simply narrowed his scope from broad views of nature to specific views on a particular, albeit highly charged, part of nature.

Coates structures the five-chaptered book in two ways. One is used to develop the general themes that cut across the individual chapters and unite the case studies. The other is the approach he uses within the individual chapters. Coates presents an initial overview of the specific topic in the opening section of each chapter, including its issues, time period, and major players. He then uses the remainder of the chapter to dive into the details. This allows Coates to deepen each case study with scholarly particulars, but by maintaining a coherent thread that runs throughout the book the general themes are never lost in minutiae.

In the introductory chapter, Coates explains the importance of what is in a name, depicts the tendency of humans to transfer human qualities to species and species qualities to humans, and makes initial comparisons between opinions towards biological invasions and human immigration. Perhaps most important, he sets the stage for the stark contrast between the opinions of those who adhere to the philosophy that native

born species, or individual humans, are best suited for an area (the "nativist" philosophy) and those who feel that local qualities are vastly improved with infusions from other areas (the "cosmopolitanist" philosophy). In one way or another, it is the conflict between the nativists and the cosmopolitanists that plays out across the next four chapters. Chapters 2-4 are largely on historical events. They describe the contributing factors and often heated debates surrounding the introduction and spread of the house sparrow, (and to a lesser degree the starling; Chapter 2), agricultural crops and their pests and pathogens (Chapter 3), and tree-of-heaven and eucalyptus (Chapter 4). In Chapter 5, Coates returns to his broader themes by focusing on the controversies surrounding human immigrants and biological invasions in our era. My guess is most readers of the book will find Chapter 5, as well as the latter part of Chapter 4, the most accessible because the case studies are largely contemporary. However, it is in Chapter 3 where the debate between the nativist and the cosmopolitanist schools best informs us of where our deeper perceptions, and inherently contradictory attitudes, towards non-native species can lead us.

Coates is a good enough writer and thorough enough thinker that, overall, the book is a lively and absorbing read. Having said that, it is important to point out that while it is not technical by any stretch of the imagination, the book is nevertheless an academic publication that is dense in detail. Most of the time the detail adds color and depth to the narrative, but in some places it can make it difficult to follow, especially when trying to link some of the more obscure players to specific events or ideas attributed to them several pages (or even chapters) back. Though this makes the book less accessible as popular reading, the tradeoff is that it is an intelligent and scholarly work that never wanders into the often sensationalist and shallow writing not uncommonly found in non-technical pieces on both non-native species and immigration. Although Coates has his opinions, they tend to illuminate rather than consciously skew the issues. His insights and subject matter remain vibrant, and he is adept at drawing the details together into a coherent whole at the end of each chapter.

The book does have one flaw. Coates seems to have tried to make a compromise between the depth and breadth of the book (something that also characterized *Nature*). He did a very admirable job mining the depths of his three case studies; of the books 256 pages, 189 are devoted to narrative and the rest to footnotes. But what was gained in detail resulted in a sacrifice in breadth. Drawing general conclusions from the three main case studies is difficult because they are not entirely representative of the way other

species introductions in North America have played out. The book would have had greater breadth had Coates included one or two additional case studies that broadened the debate. He undoubtedly picked his case studies strategically because they provided the links he was seeking between invasive species and immigration, especially for examining these links across time periods and shifting social and cultural values. In some ways though, the stories of house sparrows and starlings and eucalyptus and many agricultural crops are old news. They have been well-documented, and the stories all play out more or less in the same way. Overlooked or only given scant mention are stories of other introduced non-native species that have been less contentious, or, up until modern times, considered to be of benefit to humans. This includes game animals such as ring-necked pheasants, chukar, brown trout, and wild boar, and trees such as the European olive and fig. The question of when a species ceases to become native and becomes an invasive and harmful non-native is a critical one and is almost entirely ignored. Mountain goats in Olympic National Park, horses in parts of the arid and semi-arid western United States, some fish species (e.g., rainbow and brook trout), and plants such as yellow bush lupine are either native to some regions of the country, a state, or a bioregion, but not others, or they were native to the continent in relatively recent times. These are provocative examples of

the capricious way humans continue to decide what belongs in an ecosystem and what does not, and could have provided broader insights into our perceptions of non-native species introductions. As compelling a book as *American Perceptions of Immigrant and Invasive Species* is, it probably would have been even more so if Coates had picked some of these lesser known but equally telling examples as case studies.

Nevertheless, while the stories of house sparrows and starlings and eucalyptus have been fodder for discussion for decades, many people involved in research and management of invasive non-native species have forgotten that their concerns are not new ones. It is even debatable whether the topic is any more heated or complex now than it was a century ago. The singular strength of this book is that it highlights that, in many ways, the issues and controversies that surround species introductions have been ongoing for centuries, and in many ways they have not changed substantially. They have only been translated into the value sets, language, and perceptions unique to our time. For this reason alone, the book is a highly informative work that provides useful insights not just for people doing work on non-native species, but ecologists and conservationists in general.

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